# Driver to control LED brightness

Microsemi Corporation is introducing a new six-channel LED sink driver for controlling the brightness of more than 100 — or as few as six — standard green, red or yellow light emitting diodes from a single chip only four millimeters square.

Designated the LX1991™, the new programmable circuit targets high quality dimmable LED displays. Its high accuracy, dual mode dimming, and controlled current switching time allow consistent color hue at brightness ratios of up to 1000:1, while keeping electromagnetic emissions in check. Among its many applications, the LX1991 driver has a 43 volt breakdown capability and a wide compliance voltage range that makes it ideal for automotive in-dash displays.

The LX1991's micro-miniature package requires only two additional components in application, providing significant board space and cost reductions over conventional discrete component solutions. The four millimeter square MLPQ package is ideal with respect to power dissipation and has less than 1 microampere of drain current in sleep mode.

Dual mode dimming allows either analog (current amplitude) or digital (duty cycle) control, and both methods can be used simultaneously. A single external capacitor allows symmetrical slope control of the output current when pulse dimming. The six-channel design features independent sink currents - channels can be left floating or multiple channels can be connected together to sink more current in a single load.

The LX1991 is available for immediate sampling and delivery, with 10K quantity pricing at $1.08.

# New company to develop monolithically integrated optoelectronic chips

LNL Technologies has raised $7.1 million in seed funding to commercialize its photonic miniaturization platform. The company has already demonstrated commercially manufactured prototypes that enable the integration of 10,000 photonic functions on a single square-centimeter ($cm^2$) chip - representing an improvement of several orders of magnitude beyond any commercial technology to date.

LNL was founded in 2001 as a culmination of work at MIT by the company's founders Dr. Lionel Kimerling, Dr. Kazumi Wada, Dr. Kevin Lee and Dr. Desmond Lim. LNL's demonstrated technologies solve the two fundamental problems facing commercial photonic miniaturization: reducing the size and bend radius of a photonic "wire" (waveguide) by several orders of magnitude — from the current 1 cm to a few microns — and, sending light from a fiber cable into a miniaturized waveguide with minimal power loss (coupling). These drive key business benefits such as increased chip density, higher yields and lower packaging costs.

LNL's technology platform is protected by an extensive intellectual property portfolio. This includes patents essential to large-scale monolithic integration of photonic and optoelectronic functions. Although LNL is currently focusing its development efforts in silicon, its core intellectual property covers all materials platforms.

Fundamentally, LNL's miniaturization leverages the production geometries of chip manufacturing to enable lower-cost products. Smaller, more integrated chips result in increased chip density, higher yields and lower packaging costs: Packaging is currently the most significant factor in the cost of photonic and optoelectronic products. Integration of formerly discrete components will lower packaging costs.

The most distinctive element of LNL's miniaturization platform is its ability to leverage the existing equipment and processes of standard semiconductor foundries for manufacturing. By utilizing the existing manufacturing assets of third parties, LNL is able to operate a "fabless" production model — a rarity in advanced photonics. LNL plans to pass along significant cost savings to customers as a result of its manufacturing model and high levels of miniaturization and integration.

Miniaturization in photonics, unlike electronics, is driven primarily by one physical characteristic: the index difference between the core and cladding of an optical "wire." LNL believes its silicon-based high-index technology gives it a dramatic miniaturization advantage over competing approaches. LNL's technology also facilitates the monolithic integration of photonic functions onto very-large-scale-integration (VLSI) electronic chips through its germanium detector on-silicon technology. Germanium detectors are the key that allows for the monolithic transformation of optical signals into electronic signals on silicon chips.

# Intense Photonics expands capacity

Intense Photonics has further expanded its capability with the addition of 1000 square feet (95 square metres) of clean room at its Scottish semiconductor fabrication facility. The new area provides additional optoelectronic life test, assembly and packaging development.

Equipped with a full suite of assembly and test tools including GSI Lumonics' latest galvo-laser welder systems, the new fabrication space completes the semiconductor production capability at the organization's High Blantyre site. This will enable Intense Photonics to fully qualify its products in house. The High Blantyre facility will continue to house device design, device modelling and volume manufacture of advanced compound semiconductor chips.

"We remain committed to our policy of outsourced packaging and assembly for volume manufacture. This expansion enables the first level of assembly and test to be co-located with the fabrication facility, allowing rapid feedback of product performance", said Chief Operating Officer Keith Henderson.

"The ability to rapidly prototype, on site, fully packaged parts for test and evaluation is a key part of our product development cycle. This complements our world class volume chip capability" added David Lockwood, Chief Executive Officer.